

Amendments to the Claims:

1. (Currently Amended) A device for measuring resistances associated with electrical contacts ~~of a contact ring used in a semiconductor wafer electroplating process~~, said device comprising: a round substrate such that the substrate is mountable in ~~the~~ a contact ring useable in a semiconductor wafer electroplating process; a conductive pattern on said substrate, said conductive pattern electrically contactable with the electrical contacts of the contact ring; and resistance measurement circuitry on the substrate and surrounded by the conductive pattern, said resistance measurement circuitry connected to said conductive pattern, said resistance measurement circuitry configured to not only send test signals to said conductive pattern, but also configured to receive signals from the conductive pattern and measure the resistances associated with the electrical contacts of the contact ring.

2. (Original) A device as recited in claim 1, wherein said substrate is at least one of a silicon substrate and a metal substrate.

3. (Original) A device as recited in claim 1, wherein said resistance measurement circuitry is configured to communicate signals to an external device, said signals relating to resistances of the electrical contacts of the contact ring.

4. (Original) A device as recited in claim 1, said resistance measurement circuitry comprising a battery configured to power said resistance measurement circuitry.

Serial No. 10/723,701
Art Unit: 2829
Page 2

5. (Original) A device as recited in claim 1, said resistance measurement circuitry comprising input/output circuitry configured to initiate the sending of test signals to the conductive pattern and communicate signals to an external device relating to resistances of the electrical contacts of the contact ring.

6. (Original) A device as recited in claim 1, said resistance measurement circuitry comprising multiplexer circuitry connected to said conductive pattern on the substrate and configured to send the test signals to the conductive pattern on the substrate in a pre-determined order.

7. (Original) A device as recited in claim 1, said resistance measurement circuitry comprising multiplexer circuitry connected to said conductive pattern on the substrate, and input/output circuitry connected to said multiplexer circuitry.

8. (Original) A device as recited in claim 7, wherein the multiplexer circuitry is configured to send the test signals to the conductive pattern on the substrate in a pre-determined order.

9. (Original) A device as recited in claim 7, wherein the input/output circuitry is configured to provide a signal to the multiplexer circuitry, thereby causing the multiplexer circuitry to start sending test signals to the conductive pattern on the substrate.

Serial No. 10/723,701
Art Unit: 2829
Page 3

10. (Original) A device as recited in claim 1, said resistance measurement circuitry comprising multiplexer circuitry connected to said conductive pattern on the substrate, input/output circuitry connected to said multiplexer circuitry, and resistance determination circuitry connected to said conductive pattern and to said input/output circuitry, said resistance determination circuitry configured to determine resistances based on signals received from the conductive pattern.

11. (Original) A device as recited in claim 9, wherein the input/output circuitry is configured to communicate signals to an external device, said signals relating to resistances of the electrical contacts of the contact ring.

12. (Currently Amended) A method of using a device to measure resistances associated with electrical contacts of a contact ring used in a semiconductor wafer electroplating process, the device comprising a substrate ~~which is configured such that the substrate is mountable in the contact ring~~, a conductive pattern on the substrate, and resistance measurement circuitry on the substrate and surrounded by the conductive pattern; said resistance measurement circuitry connected to the conductive pattern, said method comprising mounting the substrate in ~~the~~ a contact ring useable in a semiconductor wafer electroplating process thereby electrically contacting at least a portion of the conductive pattern on the substrate with electrical contacts of the contact ring; having the device resistance measurement circuitry on the substrate not only send test signals to the conductive pattern which surrounds the resistance measurement

Serial No. 10/723,701

Art Unit: 2829

Page 4

circuitry, but also receive signals from the conductive pattern, and measure the resistances associated with the electrical contacts of the contact ring.

13. (Original) A method as recited in claim 12, further comprising using the device to communicate signals to an external device, said signals relating to resistances of the electrical contacts of the contact ring.

14. (Original) A method as recited in claim 12, further comprising using a battery to power the resistance measurement circuitry on the device.

15. (Original) A method as recited in claim 12, using input/output circuitry connected to the conductive pattern on the substrate to initiate sending the test signals and to communicate signals to an external device, said signals relating to resistances of the electrical contacts of the contact ring.

16. (Original) A method as recited in claim 12, further comprising using multiplexer circuitry connected to the conductive pattern on the substrate to send the test signals to the conductive pattern on the substrate in a pre-determined order.

17. (Original) A method as recited in claim 12, further comprising using resistance determination circuitry connected to said conductive pattern to determine resistances based on

Serial No. 10/723,701
Art Unit: 2829
Page 5

signals received from the conductive pattern.

18. (Original) A method as recited in claim 12, further comprising removing the device from the contact ring, cleaning at least one of the electrical contacts of the contact ring, and using the device again to measure the resistances associated with the electrical contacts of the contact ring.

Serial No. 10/723,701
Art Unit: 2829
Page 6